

Notes on a collection of bats and observations on other vertebrates from the Macquarie Marshes, New South Wales

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From 25 to 31 March, 1989, the Mammal Section of the Royal Zoological Society of NSW conducted a fauna survey of part of the Macquarie Marshes Nature Reserve. The primary purpose of our survey was to add to the knowledge of the mammalian fauna of the Marshes since the avifauna and herpetofauna have been well surveyed (Brooker and Wombey 1986; Cooper 1954). This note presents a summary of bat captures and incidental observations of other vertebrates made during the recent Mammal Section survey.

Macquarie Marshes Nature Reserve is situated approximately 100 km north of Warren in central western New South Wales (Fig. 1). The reserve is covered by large areas of wetland vegetation, and significant areas of eucalypt woodland dominated by River Red Gum *Eucalyptus camaldulensis*. There are also extensive areas of dead standing and fallen timber in former woodland apparently killed by changes in water regime associated with the construction of irrigation works. A more detailed description can be found in Pajjmans (1981) and NPWS (1990).

The trapping period was characterized by heavy rainfall and localized flooding. The associated cloud cover resulted in low temperatures and high humidity. Flooding meant that live trapping using Elliott traps was abandoned after two nights, with only introduced rodents being captured. Spotlighting was similarly limited in extent and duration, but did reveal Common Brushtail Possums *Trichosurus vulpecula*.

Bat traps and mistnets were set in an area of River Red Gum woodland flanked on one side by a man-made irrigation channel, and on the other by natural waterways. Four harp-type bat traps and one mistnet were set for two nights. All traps were set on an access road, and the mistnet was set along the margin of a large open marsh area. An additional net, set under a large Black Box *E. largiflorens*, was maintained for three nights. All bat captures were made within 1 000 m of 30°45'28"S 147°32'28"E. The location of all trapping sites is shown in Figure 2.

A spotlighting transect was run for one night and ran from the bat trapping site to the Elliott trapping site (Fig. 2).

The species captured, detailed live measurements, and method of capture are listed in Table 1. Also included are the Australian Museum accession numbers of voucher specimens taken from the field. A list of all other terrestrial vertebrate species recorded from the Marshes during the survey is given in Appendix 1. The data have been supplied to the NSW NPWS "Atlas of NSW Wildlife", described by Ellis (1992), and confirms the continued presence of many species previously recorded from the Macquarie Marshes.

The most notable captures were a number of specimens of Gould's Long-eared Bat *Nyctophilus gouldi*. This represents a significant westward range extension for this species of approximately 180 km (Ellis *et al.* 1989). The identity of three voucher specimens lodged with the Australian Museum was kindly confirmed by Dr. Harry Parnaby.

Based on our field observations, the western form of *N. gouldi* can be distinguished from sympatric Lesser Long-eared Bat *N. geoffroyi* by the same characters that are of value in separating eastern specimens of these species. That is, relatively longer ears in *N. geoffroyi*, and tall, slender Y-shaped posterior noseleaf element in *N. geoffroyi*. With respect to the noseleaf types defined by Thomas (1915), and refined by Churchill *et al.* (1984), *N. geoffroyi* is Type 3, and *N. gouldi* is Type 1. They are, however, very similar in size in western NSW (Ellis *et al.* 1989; Table 1, this study). These new specimens are further evidence of the wide degree of intraspecific variation in *N. gouldi* noted by Parnaby (1987 and pers. comm.).

The similarity in size noted above suggests that absolute size might not be a significant factor determining the niche of each species at the western limit of their zone of sympatry. Larger sample sizes and detailed ecological study will be required to examine this possibility. Interestingly, studies have shown the two species to have remarkably similar echolocation calls

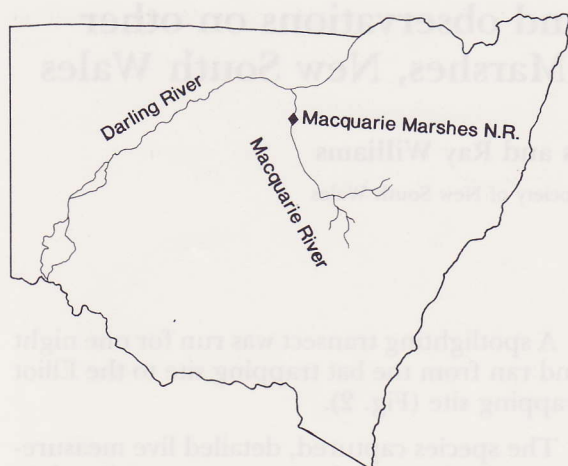


Fig. 1. Location of Macquarie Marshes Nature Reserve.

(Woodside and Taylor 1985), and methods of prey capture (Grant 1991).

Although no specimens were captured, incidental evidence suggests the presence of at least three other species of microchiropterans in the Marshes. A probable specimen of *Chalinolobus picatus* escaped from a mistnet before it was secured. The range of this species includes the Marshes area, and it was recently captured north of Bourke, NSW (Ellis and Wilson 1992). On several occasions in one night, spotlighting revealed the presence of a high-flying, very large pale-bellied bat that was probably the Yellow-bellied Sheat-tail Bat *Saccolaimus flaviventris*. Spotlighting also revealed a large fast-flying bat whose call was clearly audible, probably the White-striped Mastiff Bat *Tadarida australis* or possibly Gould's Wattled Bat *Chalinolobus gouldii*, flying above the River Red Gum woodland.

Other bat species expected from the area, but not captured during this survey include *Eptesicus baverstocki*, *Scotorepens balstoni* and *Nyctophilus timoriensis*.

General observations and spotlighting indicate that greatest bat activity occurred around the Red Gum woodland and adjacent water bodies. These areas represent zones of relatively high productivity in arid and semi-arid western NSW. Together with the captures, these observations suggest that the woodlands associated with major drainage channels in western NSW are significant habitat for microchiropterans, and should be subjected to more intensive survey. Furthermore, the conservation of the woodlands is apparently a necessary condition for the conservation of the microchiropteran fauna of the region.

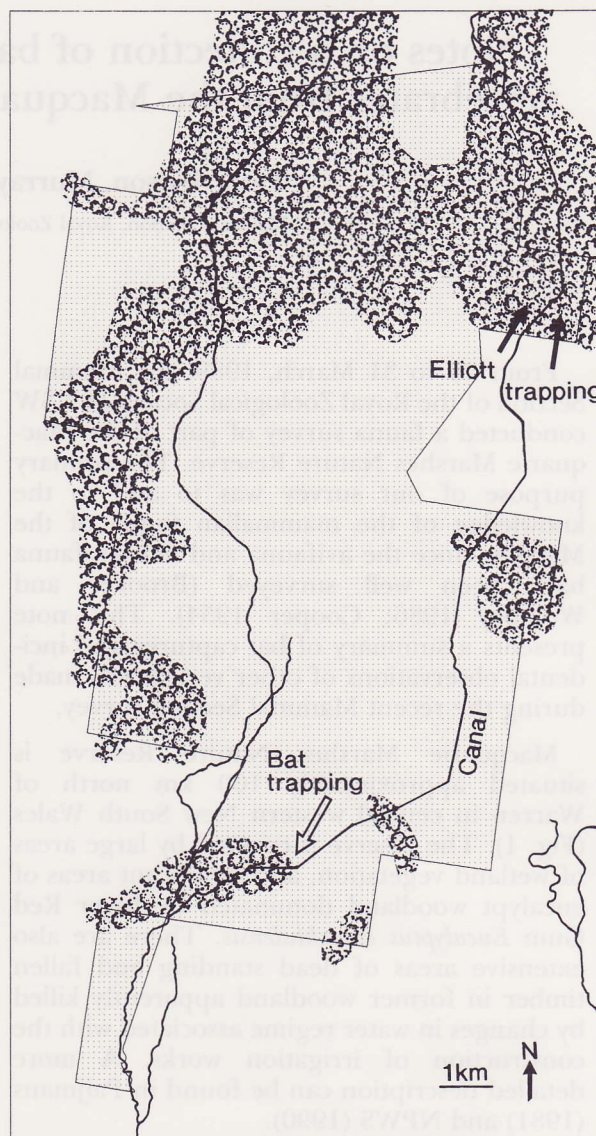


Fig. 2. Northern section of Macquarie Marshes Nature Reserve (light stippling) showing the location of trapping sites and the spotlighting transect in relation to woodland (stippled).

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Table 1. Bat captures at Macquarie Marshes Nature Reserve, March 1989. Abbreviations used: FA = Forearm in millimetres, BM = Body mass in grams, HB = Head and body in millimetres, T = Tail in millimetres, Ear = Ear in millimetres, WS = Wingspan in millimetres. All measurements are from live specimens.

Species	Sex	FA	BM	HB	T	Ear	WS	Trap site	Australian Museum Number
<i>Chalinolobus gouldii</i>	M	43.7	12.2	—	—	—	317	RGT	
	M	41.2	10.0	—	—	—	300	RGT	
	M	42.8	12.0	—	—	—	310	RGT	
	M	42.9	12.0	58.0	46.0	15.8	310	RGT	M20380
	F	46.1	13.8	60.4	49.6	15.6	328	RGT	M20379
<i>Eptesicus vulturinus</i>	M	26.0	3.0	—	—	—	192	RGT	M20381
	M	25.8	3.5	39.4	32.5	9.6	195	RGT	M20378
<i>Nyctophilus geoffroyi</i>	M	33.7	6.0	—	—	—	—	UB	M20367
	M	34.4	6.0	—	—	—	—	BB	
	M	34.6	5.8	48.9	42.8	25.9	248	RGT	M20371
	M	33.2	6.2	46.5	47.0	25.9	248	RGT	M20372
	M	31.9	5.0	43.6	48.0	24.1	227	RGT	M20373
	M	34.0	5.2	45.0	39.0	25.4	250	RGT	M20376
	M	34.2	5.5	43.0	39.5	25.2	243	RGT	M20377
	F	36.0	6.2	49.0	39.0	—	256	BB	
	F	36.8	7.0	45.9	44.5	26.2	265	RGT	M20374
	F	35.3	6.0	43.3	40.3	25.4	256	RGT	M20375
<i>Nyctophilus gouldi</i>	M	35.2	6.5	50.0	35.5	26.0	250	RGT	M20382
	M	36.8	6.5	46.8	43.6	27.0	261	RGT	M20369
	F	39.6	7.5	47.4	43.7	26.9	275	RGT	M20370
<i>Scotorepens greyii</i>	M	29.2	6.0	—	—	—	220	RGT	M20386
	M	27.2	6.2	—	—	—	213	RGT	M20385
<i>Mormopterus planiceps</i>	M	32.4	10.0	—	—	—	242	RGN	M20383

SITES: BB: Mist net set under Black Box for three nights.

UB: Caught by hand, found under the bark of a dead tree.

RGN: Mist net set between two River Red Gums adjacent to open marsh area.

RGT: Bat trap set on access road in River Red Gum woodland.

APPENDIX

List of all terrestrial vertebrate species except bats (Order Chiroptera) recorded from the Macquarie marshes during the survey period, and held in the NSW NPWS "Atlas of NSW Wildlife". Seventy-two terrestrial vertebrate species are listed below.

Class Amphibia

Order Salientia

Family Hyliidae

Litoria caerulea (Green Tree Frog)

Litoria peronii (Peron's Tree Frog)

Family Myobatrachidae

Limnodynastes fletcheri (Long-thumbed Frog)

Limnodynastes tasmaniensis (Spotted Grass Frog)

Class Aves

Order Anseriformes

Family Anatidae

Anas superciliosa (Pacific Black Duck)

Cygnus atratus (Black Swan)

Order Caprimulgiformes

Family Aegothelidae

Aegotheles cristatus (Australian Owllet-nightjar)

Family Podargidae

Podargus strigoides (Tawny Frogmouth)

Order Charadriiformes

Family Charadriidae

Vanellus miles (Masked Lapwing)

Order Ciconiiformes

Family Ardeidae

Ardea novaehollandiae (White-faced Heron)

Family Plataleidae

Platalea flavipes (Yellow-billed Spoonbill)

Platalea regia (Royal Spoonbill)

Threskiornis aethiopicus (Sacred Ibis)

Threskiornis spinicollis (Straw-necked Ibis)

Order Columbiformes

Family Columbidae

Geopelia placida (Peaceful Dove)

Order Coraciiformes

Family Alcedinidae

Dacelo novaeguineae (Laughing Kookaburra)

Halcyon sancta (Sacred Kingfisher)

Order Cuculiformes

Family Cuculidae

Cuculus pallidus (Pallid Cuckoo)

Order Falconiformes

Family Accipitridae

Circus aeruginosus (Marsh Harrier)

Haliastur sphenurus (Whistling Kite)

Family Falconidae

Falco berigora (Brown Falcon)

Falco cenchroides (Australian Kestrel)

Falco longipennis (Australian Hobby)

Order Gruiformes

Family Gruidae

Grus rubicundus (Brolga)

Family Rallidae

Gallinula ventralis (Black-tailed Native-hen)

Order Passeriformes

Family Acanthizidae

Acanthiza reguloides (Buff-rumped Thornbill)

Family Campephagidae

Coracina novaehollandiae (Black-faced Cuckoo-shrike)

Family Climacteridae

Climacteris picummus (Brown Treecreeper)

Family Corvidae

Corvus coronoides (Australian Raven)

Family Cracticidae

Cracticus nigrogularis (Pied Butcherbird)

Cracticus torquatus (Grey Butcherbird)

Gymnorhina tibicen (Australian Magpie)

Family Grallinidae

Grallina cyanoleuca (Australian Magpie Lark)

Family Hirundinidae

Cecropis nigricans (Tree Martin)

Hirundo neoxena (Welcome Swallow)

Family Meliphagidae

Entomyzon cyanotis (Blue-faced Honeyeater)

Lichenostomus penicillatus (White-plumed Honeyeater)

Manorina flavigula (Yellow-throated Miner)

Manorina melanocephala (Noisy Miner)

Family Muscicapidae

Myiagra inquieta (Restless Flycatcher)

Rhipidura leucophrys (Willie Wagtail)

Family Ploceidae

Aidemosyne modesta (Plum-headed Finch)

Order Pelecaniformes

Family Anhingidae

Anhinga melanogaster (Darter)

Family Pelecanidae

Pelecanus conspicillatus (Australian Pelican)

Family Phalacrocoracidae

Phalacrocorax carbo (Great Cormorant)

Phalacrocorax melanoleucos (Little Pied Cormorant)

Phalacrocorax varius (Pied Cormorant)

Order Psittaciformes

Family Cacatuidae

Cacatua roseicapilla (Galah)

Family Platycercidae

Barnardius barnardi (Mallee Ringneck)

Psephotus haematotus (Red-rumped Parrot)

Psephotus varius (Mulga Parrot)

Family Polytelidae

Aprosmictus erythropterus (Red-winged Parrot)

Nymphicus hollandicus (Cockatiel)

Order Strigiformes

Family Strigidae

Ninox novaeseelandiae (Southern Booboo)

Class Mammalia

Order Artiodactyla

Family Bovidae

Bos taurus (Cattle (feral))

Family Suidae

Sus scrofa (Pig (feral))

Order Carnivora

Family Canidae

Vulpes vulpes (Fox)

Order Diprotodontia

Family Macropodidae

Macropus giganteus (Eastern Grey Kangaroo)

Family Phalangeridae

Trichosurus vulpecula (Common Brushtail Possum)

Order Lagomorpha

Family Leporidae

Lepus capensis (Brown Hare)

Order Rodentia

Family Muridae

Hydromys chrysogaster (Water Rat)

Mus musculus (House Mouse)

Rattus rattus (Black Rat)

Class Reptilia

Order Squamata

Family Agamidae

Pogona barbata (Bearded Dragon)

Family Elapidae

Pseudechis porphyriacus (Red-bellied Black Snake)

Family Gekkonidae

Gehyra dubia

Gehyra variegata (Tree Dotted)

Family Scincidae

Cryptoblepharus carnabyi

Egernia striolata (Tree Skink)

Morethia boulengeri (Boulenger's Skink)

Tiliqua scincoides (Eastern Blue-tongued Lizard)

Family Varanidae

Varanus varius (Lace Monitor)

Order Testudines

Family Chelidae

Chelodina longicollis (Eastern Long-necked Tortoise)